

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 07 APR 2005

WIPO PCT

Applicant's or agent's file reference PA134730/PCT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/B2004/000706	International filing date (day/month/year) 12.03.2004 ✓	Priority date (day/month/year) 14.03.2003 ✓
International Patent Classification (IPC) or national classification and IPC E21B10/56		
Applicant ELEMENT SIX (PTY) LTD et al. ✓		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of 1 sheets, as follows:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the opinion</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>

Date of submission of the demand 28.09.2004 ✓	Date of completion of this report 06.04.2005
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Stroemmen, H. Telephone No. +49 89 2399-7345



# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/IB2004/000706

## Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

### Description, Pages

1-8 as originally filed

### Claims, Numbers

7-20 as originally filed  
1-6 received on 16.03.2005 with letter of 16.03.2005

### Drawings, Sheets

1/2-2/2 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-20
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-20
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

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Reference is made to the following documents:

D1: EP-A-0411 831  
D2: US-B1-6 290 008  
D3: US-A-4 694 918

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

V-1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

As far as said claim can be understood (see section VIII of this preliminary report), and in light of the latest arguments presented by the applicant, the document D1, which is regarded as being the closest prior art to the subject-matter of claim 1, discloses the following features thereof (the references in parentheses applying to this document):

A tool component (fig. 1) comprising a working layer (10) of ultra-hard abrasive bonded to a substrate (11) along an interface, the working layer presenting a working surface and a periphery around the working surface which provides a cutting edge for the insert, the working layer of ultra-hard abrasive having a first region (12) extending into the working layer from the working surface, and a second region (13) in contact with the first region (12), the wear resistance of the first region being less than that of the second region (col. 5, l. 8-15).

The subject-matter of claim 1 therefore differs from this known tool in that:

The wear resistance of the first region is between 50% and 95% of that of the second region.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

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V-2 The problem to be solved by the present invention may therefore be regarded as how to obtain the optimum wear resistance between the two regions.

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) since it merely consists in the selection of a an inherently broad percentage range (almost half of what is possible). In general a selection can only be regarded as inventive, if the range specified presents unexpected effects or properties in relation to the rest of the range and it is unlikely that such a broad range: 50%-95% implies such effects.

V-3 Similar arguments apply also for lack of inventive step of the additional features of claims 2-4 (Article 33(3) PCT).

V-4 The additional features of claims 5-20 are normal design possibilities and are all disclosed in D3:

Claims 5-7: See col. 17, l. 43-44.

Claims 8-10, 17-20: See col. 6, l. 29-35.

Claims 11-13: See col. 3, l. 4-28.

Claims 14-16: See col. 19, l. 22-34.

Said claims do therefore not involve an inventive step (Article 33(3) PCT).

**Re Item VII**

**Certain defects in the international application**

VII-1 The independent claim is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the most relevant prior art being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

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VII-2 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

VII-3 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 and D3 is not mentioned in the description, nor are these documents identified therein.

**Re Item VIII**

**Certain observations on the international application**

VIII-1 The amendment filed with the letter dated 16.03.2005 do seemingly not find a basis in the application documents as originally filed. In particular, this is not the case for the paragraph indicated by the applicant (Article 34(2)(b) PCT). For the sake of the feature analysis, claim 1 has been left as previously filed.

VIII-2 The term "insert" as used in claim 1, line 4 lacks an antecedent. Said claim is therefore not clear (Article 6 PCT).

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**CLAIMS:**

1. A tool component comprising a working layer of ultra-hard abrasive bonded to a substrate along an interface, the working layer presenting a working surface and a periphery around the working surface which provides a cutting edge for the component, the working layer of ultra-hard abrasive having a first region extending into the working layer from the working surface, and a second region in contact with the first region, the wear resistance of the first region being less than that of the second region, wherein the wear resistance of the first region is between 50% and 95% of that of the second region.
2. A tool component according to claim 1, wherein the wear resistance of the first region is between 60% and 90% of that of the second region.
3. A tool component according to claim 2, wherein the wear resistance of the first region is between 70% and 89% of that of the second region.
4. A tool component according to any one of the preceding claims, wherein the first and second regions comprise successive layers extending from the working surface into the working layer.
5. A tool component according to claim 4, wherein the first region extends to a depth no more than about 750 microns from the working surface.
6. A tool component according to claim 5, wherein the first region extends to a depth no more than about 500 microns from the working surface.